

74. (New) An assay device for determining the presence or amount of a plurality of target ligands in a sample, the device comprising:

a diagnostic element comprising a capillary space through which said sample flows, comprising (i) a non-absorbent surface within said capillary space, and (ii) a plurality of discrete capture zones on said nonabsorbent surface, each discrete capture zone comprising a capture element that binds one target ligand in said plurality of target ligands.

75. (New) The assay device of claim 74, comprising at least 50 said discrete capture zones, corresponding to at least 50 target ligands.

76. (New) The assay device of claim 74, wherein said nonabsorbent surface comprises a width dimension substantially perpendicular to the direction of fluid flow through the capillary space, and wherein each said discrete capture zone spans said width dimension.

77. (New) The assay device of claim 74, wherein said capture element is selected from the group consisting of an antibody or binding fragment thereof, a nucleotide sequence, an enzyme, a chelator, and a biosensor.

78. (New) The assay device of claim 74, wherein said device further comprises a chamber fluidly connected to said diagnostic element, and a time gate that delays fluid flow between said chamber and said diagnostic element.

79. (New) The assay device of claim 74, wherein said discrete capture zones comprise particles immobilized thereon, wherein said particles comprise said capture element immobilized thereon.

80. (New) The device of claim 79 wherein the particles are latex.

81. (New) The device of claim 79 wherein the particles are polystyrene.

82. (New) The device of claim 79 wherein the particles are nanoparticles.

83. (New) The device of claim 82 wherein the nanoparticles comprise silica, zirconia, alumina, titania, ceria, metal sols, or polystyrene.

84. (New) The device of claim 82 wherein the nanoparticles have sizes in a range from about 1 nm to 100 nm.

85. (New) The device of claim 82 wherein the nanoparticles are immobilized on said nonabsorbent surface through adsorption or covalent bonds.

86. (New) The device of claim 79 wherein said particles are immobilized on said nonabsorbent surface by magnetic means, hydrophobic means, hydrogen bonding, electrostatic means, or entrapment.

87. (New) The device of claim 79, wherein said particles have diameters ranging from about 0.1 mm to 10 mm.

88. (New) The device of claim 79, wherein said receptor is immobilized on a surface of the particle.

89. (New) A method for determining the presence or amount of a plurality of target ligands in a sample, the method comprising:

contacting the diagnostic element of claim 1 with

- (i) a sample, and
- (ii) a labeled reagent that binds to said plurality of target ligands,

whereby said sample and said labeled reagent flow through said capillary space for capture of each said target ligand at its corresponding capture zone; and

generating a plurality of detectable signals from label bound to each target ligand at its corresponding capture zone, whereby said signals are related to the presence or amount of said plurality of target ligands in said sample.

90. (New) The method of claim 89, wherein said diagnostic element comprises at least 50 said discrete capture zones, corresponding to at least 50 target ligands.

91. (New) The method of claim 89, wherein said nonabsorbent surface comprises a width dimension substantially perpendicular to the direction of fluid flow

through the capillary space, and wherein each said discrete capture zone spans said width dimension.

92. (New) The method of claim 89, wherein said capture element is selected from the group consisting of an antibody or binding fragment thereof, a nucleotide sequence, an enzyme, a chelator, and a biosensor.

93. (New) The method of claim 89, wherein said discrete capture zones comprise particles immobilized thereon, wherein said particles comprise said capture element immobilized thereon.

94. (New) The method of claim 89, wherein said labeled reagent is a fluorescently labeled reagent.

95. (New) A method for determining the presence or amount of a plurality of target ligands in a sample, the method comprising:

contacting the diagnostic element of claim 1 with

(i) a sample, and

(ii) a plurality of ligand analogue conjugates, each ligand analogue conjugate corresponding to one of said plurality of target ligands,

whereby said sample and said plurality of ligand analogue conjugates flow through said capillary space, whereby each target ligand competes with its corresponding ligand analogue conjugate for capture at its corresponding capture zone; and

generating a plurality of detectable signals from ligand analogue conjugate bound at its corresponding capture zone, whereby said signals are related to the presence or amount of said plurality of target ligands in said sample.

96. (New) The method of claim 95, wherein said diagnostic element comprises at least 50 said discrete capture zones, corresponding to at least 50 target ligands.